

WHAT IS CLAIMED IS

1. A mass spectrometer comprising:
 - an ion source generating sample ions;
 - an ion trap having a pair of endcap electrodes and a ring electrode and accumulating and ejecting said ions;
 - a gas introduction hole arranged in said ring electrode or said endcap electrode for introducing an intermittently-introduced bath gas into said ion trap at a predetermined timing; and
 - a detector detecting the ions ejected from said ion trap,
- wherein the center axis of said gas introduction hole is arranged so as to pass through the center of said ion trap.
2. The mass spectrometer according to claim 1, wherein said gas introduction hole is arranged in said ring electrode.
3. The mass spectrometer according to claim 1, wherein said gas introduction hole is arranged in at least one of said endcap electrodes.
4. The mass spectrometer according to claim 1, wherein said intermittently-introduced bath gas is introduced into said ion trap via a pulsed valve using a solenoid.
5. The mass spectrometer according to claim 1, further comprising a unit controlling an application timing of an RF voltage applied to said ring electrode

and an introduction timing of said intermittently-introduced bath gas from said gas introduction hole.

6. The mass spectrometer according to claim 1, wherein the distance from the front edge of said gas introduction hole to the center of the said ion trap is below 16mm.

7. A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;

10 allowing said ions to be incident and accumulated into an ion trap having a pair of endcap electrodes and a ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

15 introducing an intermittently-introduced bath gas from a gas introduction hole arranged in said ring electrode having a center axis arranged so as to pass through the center of said ion trap into said ion trap to dissociate said precursor ions;

20 ejecting fragment ions from said ion trap; and detecting the ejected ions.

8. The mass spectrometric method according to claim 7, further comprising a step of controlling an application timing of an RF voltage applied to said ring electrode and an introduction timing of said intermittently-introduced bath gas from said gas introduction hole.

9. A mass spectrometric method comprising the

steps of:

generating sample ions by an ion source;

allowing said ions to be incident and
accumulated into an ion trap having a first endcap
5 electrode having an incidence hole into which said ions
are incident, a second endcap electrode having an
ejection hole from which said ions are ejected, and a
ring electrode;

selectively holding precursor ions having a
10 desired mass in said ion trap;

introducing an intermittently-introduced bath
gas from a gas introduction hole arranged in said ring
electrode having a center axis passing through the
center of said ion trap to be almost orthogonal to an
15 axis connecting the center axis of said incidence hole
and the center axis of said ejection hole into said ion
trap to dissociate said precursor ions;

ejecting fragment ions from said ion trap; and
detecting the ejected ions.

20 10. A mass spectrometric method comprising the
steps of:

generating sample ions by an ion source;

allowing said ions to be incident and
accumulated into an ion trap having a first endcap
25 electrode having an incidence hole into which said ions
are incident, a second endcap electrode having an
ejection hole from which said ions are ejected, and a
ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

jetting an intermittently-introduced bath gas from a gas introduction hole arranged in said ring electrode having a center axis almost orthogonal to an axis connecting the center axis of said incidence hole and the center axis of said ejection hole so as to reach the center part of said ion trap for dissociating said precursor ions;

10 ejecting fragment ions from said ion trap; and detecting the ejected ions.

11. A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;

15 allowing said ions to be incident and accumulated into an ion trap having a first endcap electrode having an incidence hole into which said ions are incident, a second endcap electrode having an ejection hole from which said ions are ejected, and a ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

jetting an intermittently-introduced bath gas from a gas introduction hole arranged in said ring electrode having a center axis arranged so as to pass through a region including the center of said ion trap into said ion trap to dissociate said precursor ions;

ejecting fragment ions from said ion trap; and

detecting the ejected ions.